

What is claimed is:

1. A material useful as a substrate for preparing articles, comprising:
a compressed sheet of graphite having graphite intercalation compounds included therein.
2. A material of claim 1 wherein the intercalant comprises a material selected from the group consisting of halogens, mixed halogens, halides, oxidizing acids, alkali metals, transition metals and mixtures.
3. A material of claim 1 which comprises at least 1% of one or more graphite intercalation compounds.
4. A material of claim 1 which comprises from 3 to 20 % by weight of a graphite intercalation compound.
5. A material comprising at least one layer of a material of claim 1 and another layer of flexible graphite sheet.
6. A material of claim 1 which has a density of from about 0.1 to about 1.5 grams/cm³.
7. A material of claim 1 which has a thickness of from 0.075 to 1.4 mm.
8. A material of claim 1 which has an electrical conductivity within the range of from 1.0 to $7.6 \times 10^7 \Omega^{-1}\text{m}^{-1}$.
9. A material of claim 1 which has a thermal conductivity within the range of 5 to 2000 W/m K.

10. A material of claim 1 which has an electrical conductivity of less than about 8 μ ohm-meter.
11. A material of claim 1 wherein the sheet contains resin at a level of at least about 5% in the flexible graphite sheet.
12. A process for preparing a material useful as a substrate for preparing articles such as an embossed or unembossed flexible graphite sheet, comprising:
- intercalating a sheet of flexible graphite to an extent necessary to form graphite intercalation compounds which increase the thermal and/or electrical conductivity of the graphite sheet; and
- compressing the sheet following intercalation.
13. A process of claim 12 wherein the intercalant comprises a material selected from the group consisting of halogens, mixed halogens, halides, oxidizing acids, alkali metals, transition metals and mixtures.
14. A process of claim 12 wherein the sheet following intercalation comprises at least 1% of one or more graphite intercalation compounds.
15. A process of claim 12 wherein the sheet following intercalation comprises from 3 to 20 % by weight of a graphite intercalation compound.
16. A process of claim 12 wherein at least one layer of a material of claim 1 is compressed with another layer of flexible graphite sheet.
17. A process of claim 12 wherein the final sheet has a density of from about 0.1 to about 1.5 grams/cm³.

18. A process of claim 12 wherein the final sheet has a thickness of from 0.075 to 1.4 mm.

19. A material of claim 12 wherein the final sheet has an electrical conductivity within the range of from 1.0 to $7.6 \times 10^7 \Omega^{-1}\text{m}^{-1}$.

20. A process of claim 12 wherein the final sheet has a thermal conductivity within the range of 5 to 2000 W/m K .

21. A process of claim 12 wherein the sheet contains resin at a level of at least about 5% in the flexible graphite sheet.

22. A material of claim 12 wherein the final sheet has an electrical resistivity of less than about 8 μ ohm-meter.